

REMARKS

Applicant wishes to thank the Examiner for his helpful suggestions and recommendations during the telephonic interview on November 1, 2002, in which the outstanding rejections and cited patents and printed publications were discussed in relation to the pending claims. As a result, Applicant submits this Amendment and Response.

Status of the Claims

Claims 75-98 are pending in the application and stand rejected. Claims 1-74 were previously canceled without prejudice. Applicant amends claims 95 and 97. Accordingly, claims 75-98 remain pending for examination.

Amendments to the Claims

Applicant amends claims 95 and 97 to remove the word "a" before "means" in the last clause of each of the claims. Applicant submits that no new matter is introduced by these amendments.

Rejections Under 35 U.S.C. § 112, first paragraph

Claims 75-89, 93 and 95-98 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In particular, the Office action asserts that in claim 75, the presence of a sample support holder for multiple sample supports in a lock chamber that does not include a separate sample chamber having the sample support holder therein is not supported in the original specification. Further, the Office action asserts that in claims 95-98 the final wherein clause in combination with the claimed structure is not supported by the originally filed specification.

As stated previously, Applicant submits that the specification explicitly describes a vacuum lock chamber containing a sample support holder adapted to support more than one sample support. Specifically, the specification at column 9, lines 39-45 states:

[a] tested sample plate may be transported from ion source chamber to a vacant slot *in the cassette within the vacuum lock chamber, and the sample cassette indexed to position another sample plate for transport from the vacuum lock chamber to the ion source chamber*, then the sample door [is] closed and the new

samples on the new plate tested (emphasis added).

Although the Office action asserts that the above text is in reference to Figure 8, which includes a separate storage chamber, Applicant submits that the above quoted text is description that is applicable to the invention as a whole. In support of this position, Applicant submits that the specification extensively and repeatedly uses reference numerals when specifically referring to structure shown in the figures. The above quoted text does not contain any reference numerals and thus, should not be considered specific to any particular figure, but general description of the invention.

Further, the Office action alleges a distinction between embodiments of the invention that are manually operated, requiring operator intervention, and embodiments that are fully automatic. However, as the next line of text after the above quote describes,

[w]hile the mass spectrometer is testing one sample plate, new samples may be *manually or automatically* loaded and/or tested using sample plates removed without interfering with the mass spectrometer or its [sic] vacuum system (emphasis added).

Specification, col. 9, lns. 45-49. Accordingly, embodiments of the invention are not necessarily only manual or only automatic, but may be adapted for both types of operation. In addition, the immediately above quoted text also does not include reference numerals to specific structure depicted in a figure. Thus, the description at column 9, lines 39-49 should be considered to be applicable to the invention as a whole and not any particular figure or mode of operation. Therefore, Applicant submits that claim 75 is supported in the specification and respectfully requests reconsideration and withdrawal of this rejection for claim 75 and claims dependent therefrom.

With respect to claims 93 and 95-98, Applicant submits that the specification at column 9, lines 39-45 also supports claim 93 and the final wherein or means clauses in claims 95-98. The clauses in question essentially require structure that permits a vacuum lock chamber and an ion source chamber to be in fluid communication and under a vacuum controlled environment during disassociation, transportation and association of first and second sample supports. The specification at column 9, lines 39-45 states:

[a] tested sample plate may be transported from ion source chamber to a vacant slot in the cassette within the vacuum lock chamber, and the sample cassette indexed to position another

sample plate for transport from the vacuum lock chamber to the ion source chamber, *then the sample door [is] closed* and the new samples on the new plate tested (emphasis added).

According to the sequence of events described in the quoted text, fluid communication exists between the vacuum lock chamber and ion source chamber during the disassociation, transportation and association of first and second sample supports. Subsequent to a second sample support being positioned in the ion source chamber, the sample door positioned between the vacuum lock chamber and the ion source chamber is closed to cut off fluid communication between the vacuum lock chamber and the ion source chamber. Conversely, when this sample door is open, fluid communication exists between the vacuum lock chamber and the ion source chamber. Thus, the means in claims 95 and 97 and the output port in claims 96 and 98 may be output door 76 and/or 76A or other suitable structure disclosed in the specification, or equivalents thereof. Therefore, Applicant submits that claims 93 and 95-98 are supported in the specification and respectfully requests reconsideration and withdrawal of this rejection for these claims.

Rejections Under 35 U.S.C. § 103(a)

Claims 75-81 and 84-98 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 5,288,644 to Beavis et al. (“Beavis”) in view of “An Automatic Analytical Laboratory for Mass-Spectrometric Isotopic-Dilution Analysis of Uranium and Plutonium in Fuel Solutions,” *Safeguards Tech., Proc. Symp.*, 2, pages 165-176 (1970) by Wilhelmi et al. (“Wilhelmi”); U.S. Patent No. 5,382,793 to Weinberger et al. (“Weinberger”), and “Automated Sample Transport System for Chromatography/Secondary Ion Mass Spectrometry,” *Rev. Sci. Instrum.* 60, pages 1071-1074 (1989) by Duffin et al. (“Duffin”).

Claim 82 is rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Beavis in view of Wilhelmi, Weinberger and Duffin as applied to claim 81, and further in view of U.S. Patent No. 5,037,611 to Ledford, Jr. Claim 83 is rejected under 35 U.S.C. § 103 as allegedly being unpatentable over Beavis in view of Wilhelmi, Weinberger and Duffin as applied to claim 75, and further in view of “A direct insertion sample handling system for mass spectrometers,” *Int. J. Mass Spectrom. Ion Phys.*, 3, pages 159-160 (1969) by Bakker et al.

Applicant comments with respect to the first full paragraph on page 10 of the Office action that discusses the previous art rejections and Applicant’s arguments filed on April 12,

2002, which, according to the Office action, were fully considered, but deemed not persuasive. The Office action asserts that Beavis teaches the dissociation and attachment of a sample support to a sample receiving stage, i.e., the top of a cylindrical rod that is the rotating part of a stepper motor. Consequently, the Office action further asserts that the secondary references need not teach this aspect of the claims as the secondary references are capable of performing this action by virtue of the sample support being removably attached to the sample support transport mechanism. Applicant respectfully disagrees with these assertions.

First, Applicant's claims require an ion source chamber comprising a sample receiving stage, i.e., the ion source chamber includes (or contains) a sample receiving stage. Second, Applicant's claims require a sample transport mechanism adapted to disassociate a first sample support from the sample receiving stage, transport the first sample support from the ion source chamber through an output port to a vacuum lock chamber and transport a second sample support from the vacuum lock chamber through the output port to the ion source chamber and to associate the second sample support with the sample receiving stage. Beavis does not teach, suggest or motivate any mechanism or means for moving a sample support to an ion source chamber from another chamber and associating the sample support with a sample receiving stage within the ion source chamber. Accordingly, the assertion in the Office action that Beavis teaches the dissociation and attachment of a sample support to a sample receiving stage is incorrect.

Assuming for the sake of argument that the means for dissociation and attachment in Beavis is operator intervention, i.e., manual dissociation and attachment, Beavis would still fail to teach, suggest or motivate any mechanism or means for moving a sample support to an ion source chamber from another chamber and associating the sample support with a sample receiving stage within the ion source chamber. More specifically, the sample receiving stage allegedly disclosed in Beavis is the top of a cylindrical rod that is the rotating part of a stepper motor. If a sample support is placed on the top of the cylindrical rod and moved through a vacuum lock into an ion source chamber, there could be no subsequent association of the sample support with a sample receiving stage in the ion source chamber because the association occurred prior to introduction into the vacuum lock. Alternatively, if the top of the cylindrical rod initially is positioned in the ion source chamber and an operator was to associate a sample support with the top of the cylinder in the ion source chamber, then there would be no need to transport the

sample support through an output port from a vacuum lock. Thus, Applicant submits that Beavis does not teach, suggest or motivate any mechanism or means for moving a sample support to an ion source chamber from another chamber and associating the sample support with a sample receiving stage within the ion source chamber.

Weinberger, Wilhelmi, and Duffin do not cure this deficiency. As stated previously, Weinberger does not teach, suggest or motivate a transport mechanism that can disassociate, transport and associate sample supports as set forth in Applicant's claims. Although Weinberger illustrates disassociating a sample probe (30, 154) from a sample ring (152) with a push-rod type structure (159), Weinberger's sample probe is not associated with a sample receiving stage in an ion source chamber. Rather, Weinberger's sample probe never leaves the tip of the push-rod until it returns to the sample ring. See, e.g., Weinberger, Fig. 7 and col. 9, lines 5-17 (indicating that probe remains attached to tip of push-rod entire time probe undergoes irradiation). Accordingly, Weinberger does not teach, suggest or motivate a sample support transport mechanism that is adapted to either "disassociate a ... sample support from [a] sample receiving stage," or "associate ... [a] sample support with [a] sample receiving stage" in an ion source chamber.

Although Wilhelmi states "[f]rom the lock chamber the individual beads are transported separately by a pinch [sic] rod into the ion source for measurement and back to the cassette after measurement," Wilhelmi does not teach, suggest or motivate a sample support transfer mechanism adapted to associate a sample support with a sample receiving stage in an ion source chamber. Wilhelmi, page 171, section 4.1. Rather, Figure 3 of Wilhelmi suggests that the sample support remains attached to the push rod. Accordingly, Wilhelmi does not teach, suggest or motivate the sample support transport mechanism required by Applicant's claims.

Further, Duffin does not disclose or suggest any form of sample support transport mechanism. Rather, Duffin describes a sample translator. See, e.g., Duffin, Fig. 1 and pages 1072-73. Moreover, even if Duffin's sample translator is considered to teach a sample receiving stage, Duffin provides no teaching, suggestion or motivation of any mechanism adapted to disassociate or associate a sample support with a sample receiving stage, or to transport the sample support to a sample receiving stage. Accordingly, Duffin does not teach, suggest or motivate the sample support transport mechanism required by Applicant's claims. Therefore, considered as a whole, claims 75-91 and 95-98 are novel and unobvious over all of the cited

references, either alone or in combination, and Applicant respectfully requests reconsideration and withdrawal of this rejection for claims 75-91 and 95-98.

Furthermore, claims 95-98 require that the vacuum lock chamber and the ion source chamber be in fluid communication and under a vacuum controlled environment during disassociation, transportation and association of the first and second sample supports. Based on the above discussion with respect to Beavis, the dissociation and association of a sample support holder with the top of a cylindrical rod would be accomplished manually while under ambient pressure, not a vacuum environment. None of Wilhelmi, Weinberger and Duffin cure this deficiency. Accordingly, Beavis, Wilhelmi, Weinberger and Duffin, either alone or in combination, do not teach, suggest or motivate at least that which Applicant recites in the final wherein or means clauses of claims 95-98, and Applicant respectfully requests reconsideration and withdrawal of the rejections to at least these claims.

Applicant submits that method claims 92-94 also are unobvious in view of the combination of cited references. Specifically, Beavis, Wilhelmi, Weinberger, and Duffin fail to teach, suggest or motivate a method of obtaining mass data that includes at least the steps of:

disassociating [a] first sample support from [a] sample receiving stage;

transporting the first sample support from [an] ion source chamber to [a] vacuum lock chamber;

associating the first sample support with [a] sample support holder;

disassociating a second sample support from the sample support holder;

transporting the second sample support from the vacuum lock chamber to the ion source chamber; [and]

associating the second sample support with the sample receiving stage.

For the reasons discussed above for the system claims, the cited references fail to teach, suggest or motivate the sequential steps for disassociating and associating a sample support with a sample receiving stage and a sample support holder as set forth in claims 92-94. Accordingly, Applicant submits that claims 92-94, considered as a whole, are novel and unobvious over the cited references, either alone or in combination, and Applicant respectfully requests reconsideration and withdrawal of this rejection for claims 92-94.

CONCLUSION

Based on the above amendments and remarks, Applicant respectfully submits that claims

75-98 are in condition for allowance and requests entry as such. If the Examiner believes that a telephonic interview would expedite the prosecution of the application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,



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